PLASTIC

BILINGUAL TECNOLOGY SECTION

Why plastics are important in our lives?

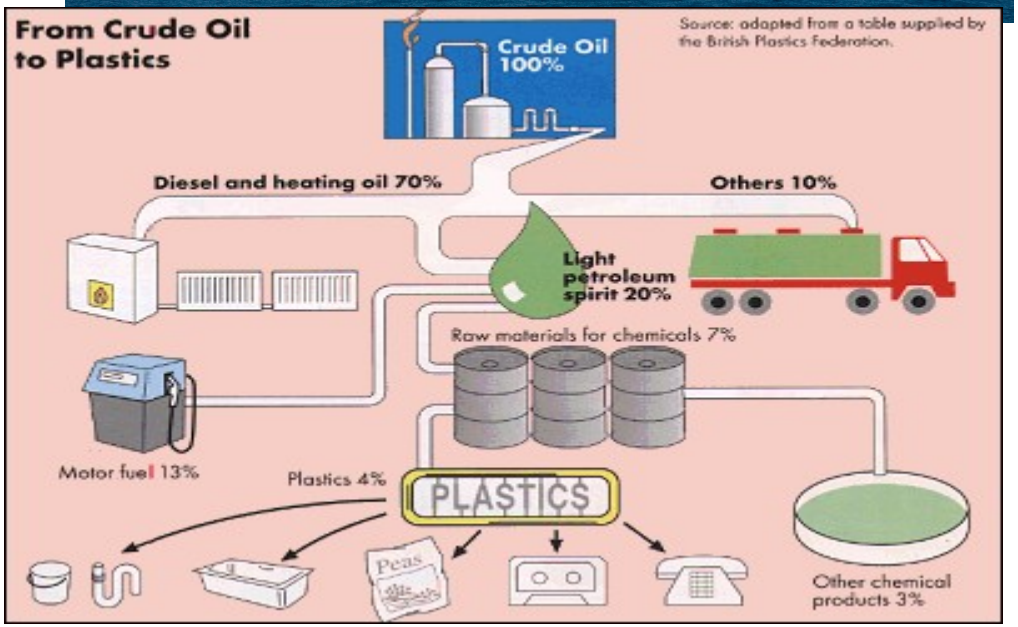
Plastics are the most recent group of materials and have replaced wood and metals with advantages in many situations. Plastics surround us; there are many different plastics in our houses, in cars, in hospitals. Everywhere we look we can see them.

Plastic began to be used in an important form in 1950. The evolution of plastics has been continued from this date. Today more than seven hundred different classes exist.

PLASTIC ,NATURAL OR SYNTHETIC MATERIAL?

NATURAL MATERIAL-They come from animals or plants .

SYNTETIC MATERIAL –They come from petroleum,natural gas. It needs a process called polymerization.Plastics are man-made materials



PLASTIC OBJECTS











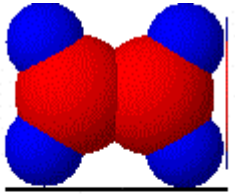


In pairs try to identify the picture with the name of the object.

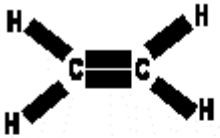
1shampoo bottle 2. mouth wash bottle 3. two litre beverage bottle 4. food bag 5. rubbish bag 6. bread bag 7. grocery bag 8. CD case 9. straws 10. milk bottle 11. hot beverage cup 12. meat tray 13. margarine tub 14. egg carton 15. nappies 16. detergent bottles 17. cooking oil bottles 18. food wrap

A BIT OF CHEMISTRY

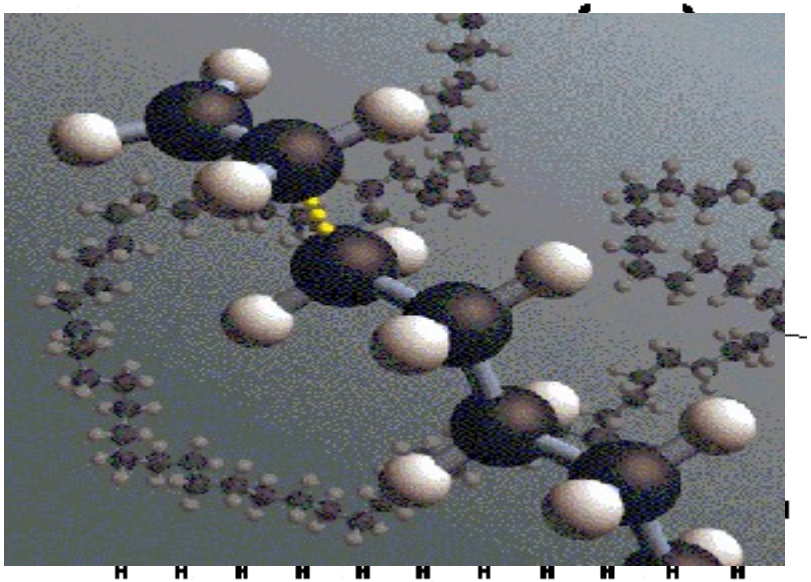
Poly is a Greek prefix that means many . A mononer is a small molecule which can be bonded to another monomer to form a long molecule as kown as a polimer A polimer has many monomers .
In ms.
A plastic is made of polimer
A polimer is made of monomer
A monomer is made of carbon
in its backbones.(organic material)



a monomer ethene



C_2H_4



a polymer poly(ethene)

EXAMPLES OF PLASTICS

Man-made Rubber Sole

Nylon

Bottles made of Pet

expanded polystyrene or styrofoam

CHARACTERISTICS OF PLASTICS

-Plastics are non-corrosive and non-toxic

- -They are waterproof or impermeable

-They are light.
-They wash well
-Theu have good mechanical properties
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-Plastics are good insulators when you apply heat,sound or electricity.

-They are not biodegradable and cannot be easily recycled.

They can be clear.

-Most plastics can be moulded in different shape when you apply heat

--Plastics are cheap

TYPES OF PLASTIC
THERMOSTABLE PLASTICS

-When you heat plastic you can cahge its shape once , and you can not repeat this process again

-Thermostable plastic is not recyclable

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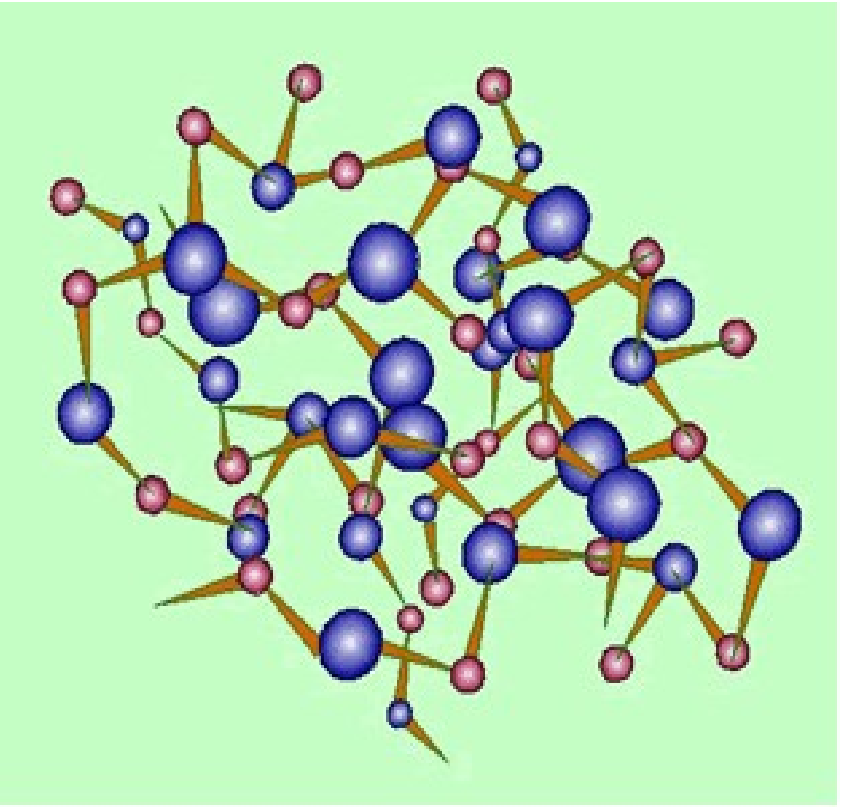


Poliester resin

-Polyester doesn´t burn well,it self-extinguishes after ignition.

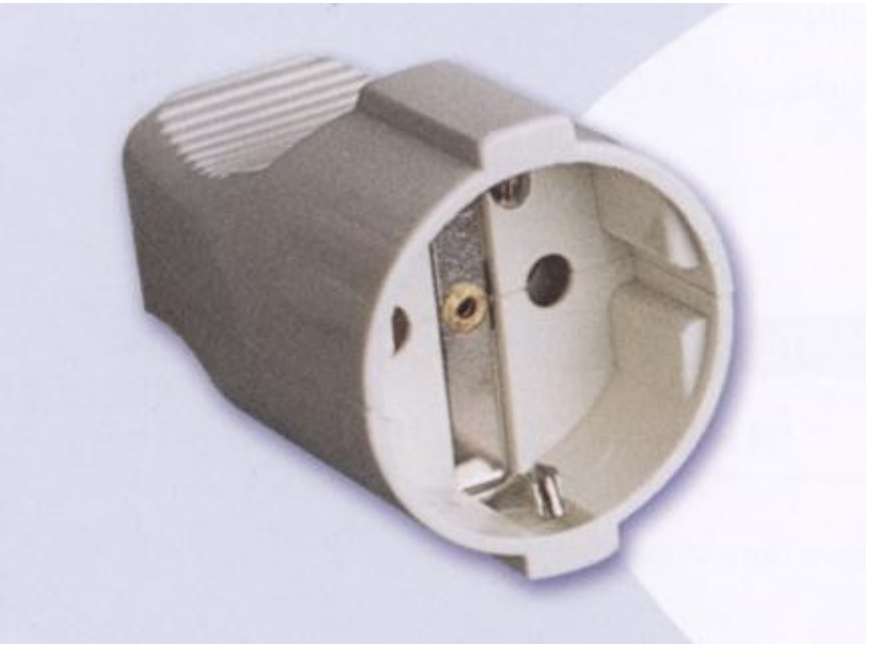
-Polyester fibres are resilient and they absorb very little water ,so polyester is commonly used in the textile industry to make fabrics,ropes,etc.

-Used for casting and reinforced by glass fibres produces GPR that can resist impact and is used in car body repairs.... (bodyworks for cars and boats,crash helmet ...)

Phenolic resins (bakelite)

-Electrical insolator

-heat resistant



POLYURETHANE

-It is used to make tyres and adhesives

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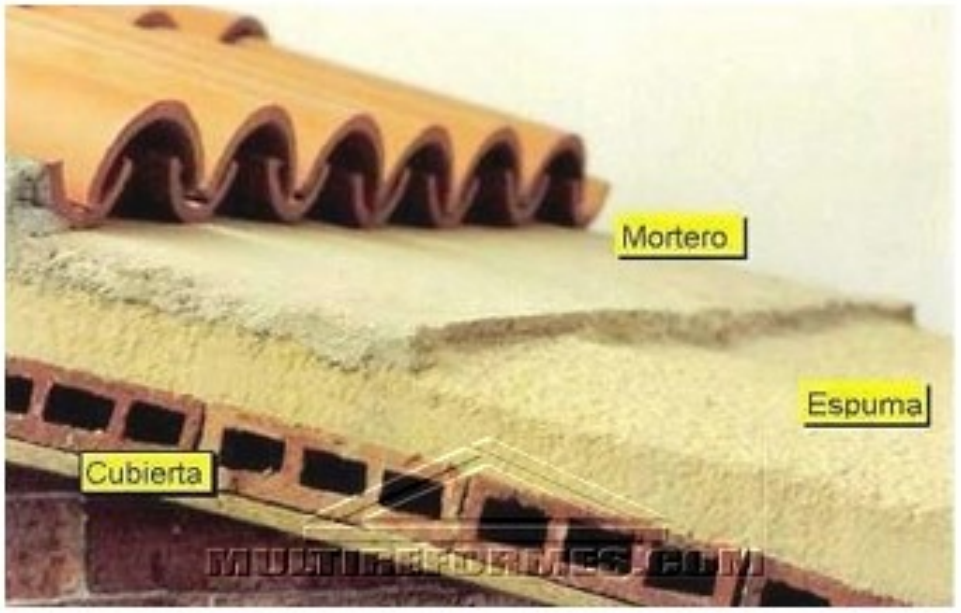
-Blowing air into makes a foam .Sponges are used like insolation panels



POLYURETHANE

Polyurethane is in general quite tough and durable.Polyurethane is also used to make tyres and adhesives.

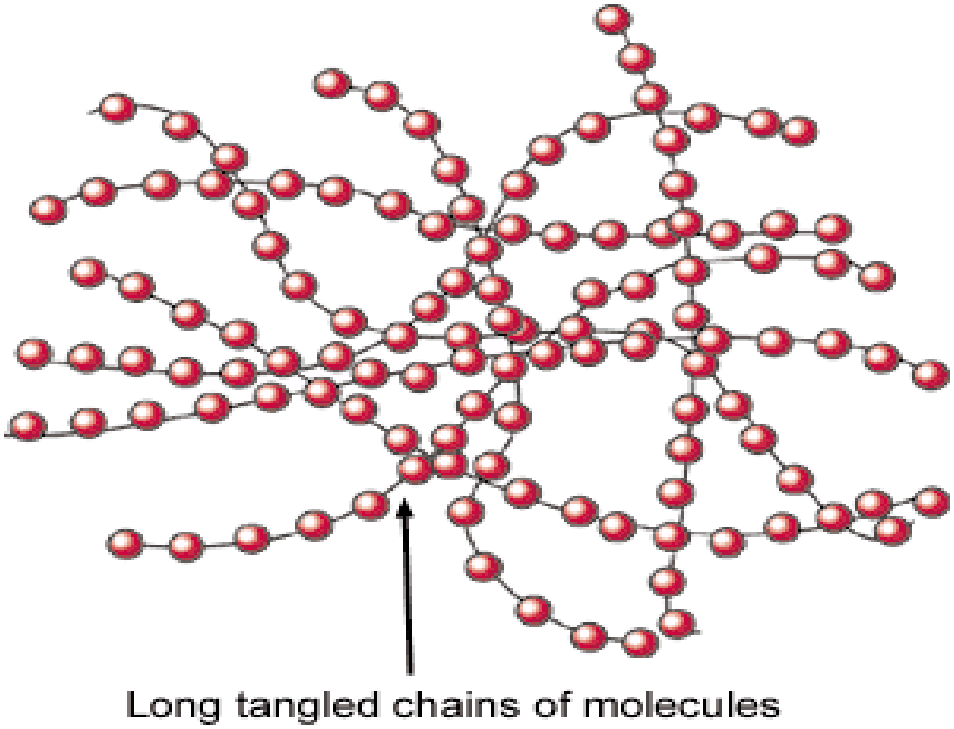
Blowing air into hot Polyurethane makes a foam. The solid Polyurethane foam is used for highly resilient flexible insulation panels.

Melamine formaldeyhe(MF)

- Scratch resistant.
- Low Water absortion.Stain resistant.No odour.
- Available in a wide range of colours

THERMOPLASTICS

-When **can heat plastic you can change its shape ,and you can repeat this process many times. Thermoplastic is recyclable**



POLYETHYLENE (PE)

Polyethilene is soft and flexible.It´s monomer is a molecule called ethylene.

It is used for making plastics bottles,bags,etc.

POLIVINYL CHLORIDE (PVC)

PVC is used for water pipes because it doesn´t corrode and because it´s cheaper than metal pipes.It´s also used for packaging ,window frames ,rubber boots....

POLYSTYRENE (PS)

Polystyrene is relatively impact-resistant so it is widely used for furnitures,television,phones.etc.The expanded polystyrene is very light and an excellent thermal insulator.

TEFLON

Teflon is heat-resistant and has almost frictionless surface.

methacrylate (PMMA)

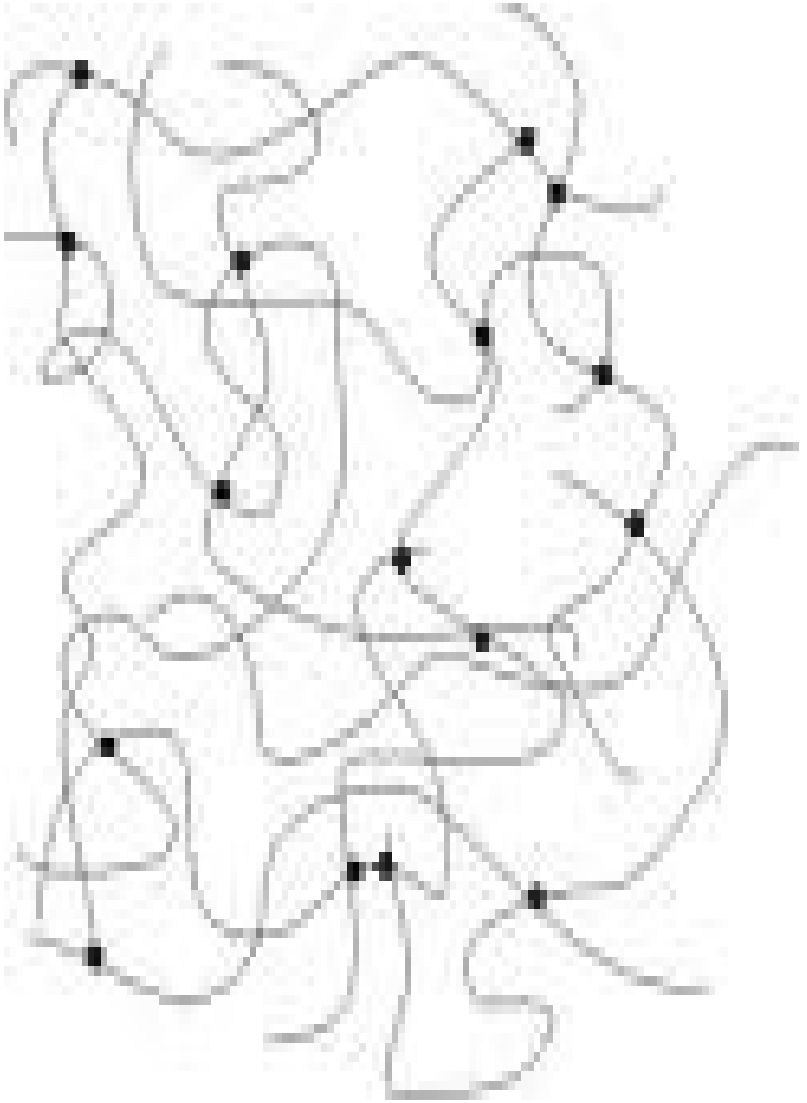
- Clear ,has good optical properties.

ELASTOMER

Elastomer is very flexible.

The links between chains in an elastomer don´t break when a force separates the chain a bit.

When the force disappears the chains return to their original position and the object return to the original shape.

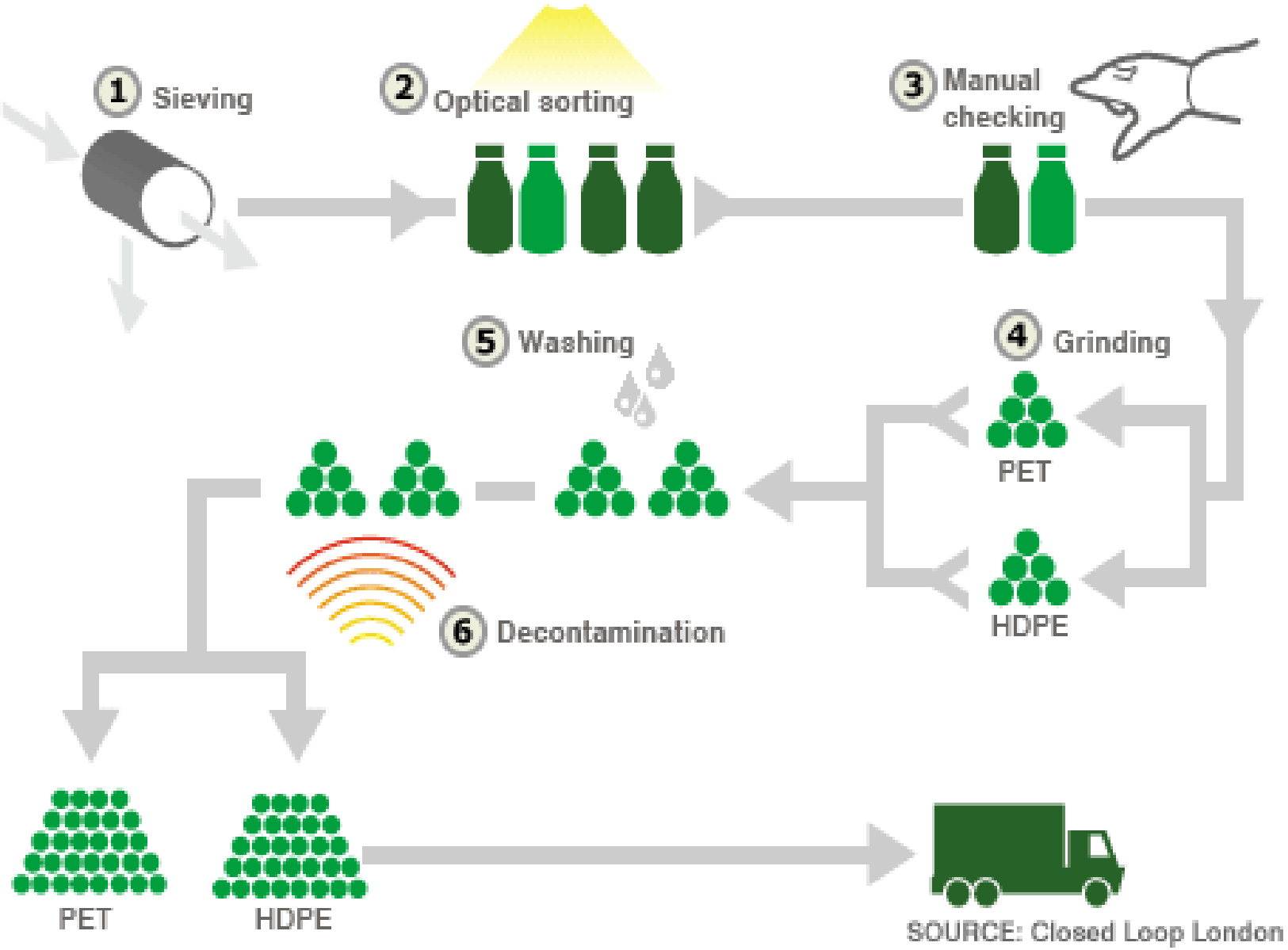


RUBBER OR POLYPROPYLENE

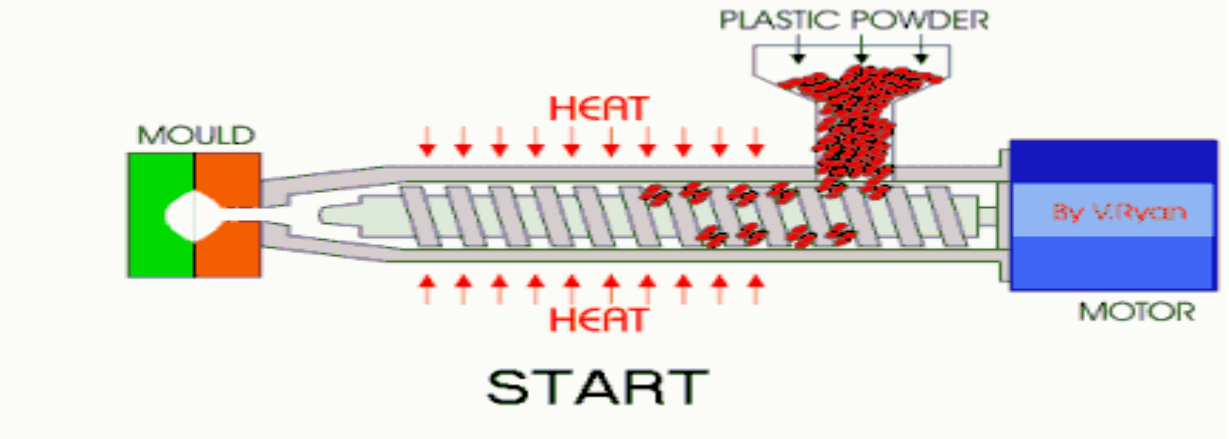
Polypropylene is natural rubber.

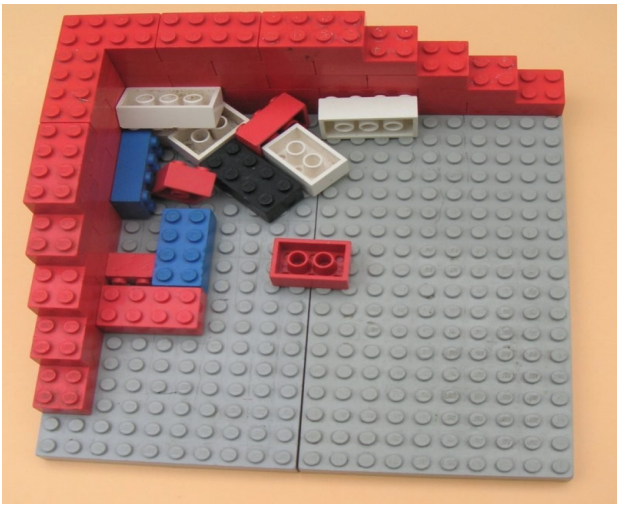
I´ts very expensive ,so we only use it in high quality products such as latex gloves

THE PLASTIC MUST BE RECYCLED?



Fabrication of Plastics.
INYECTION MOULDING



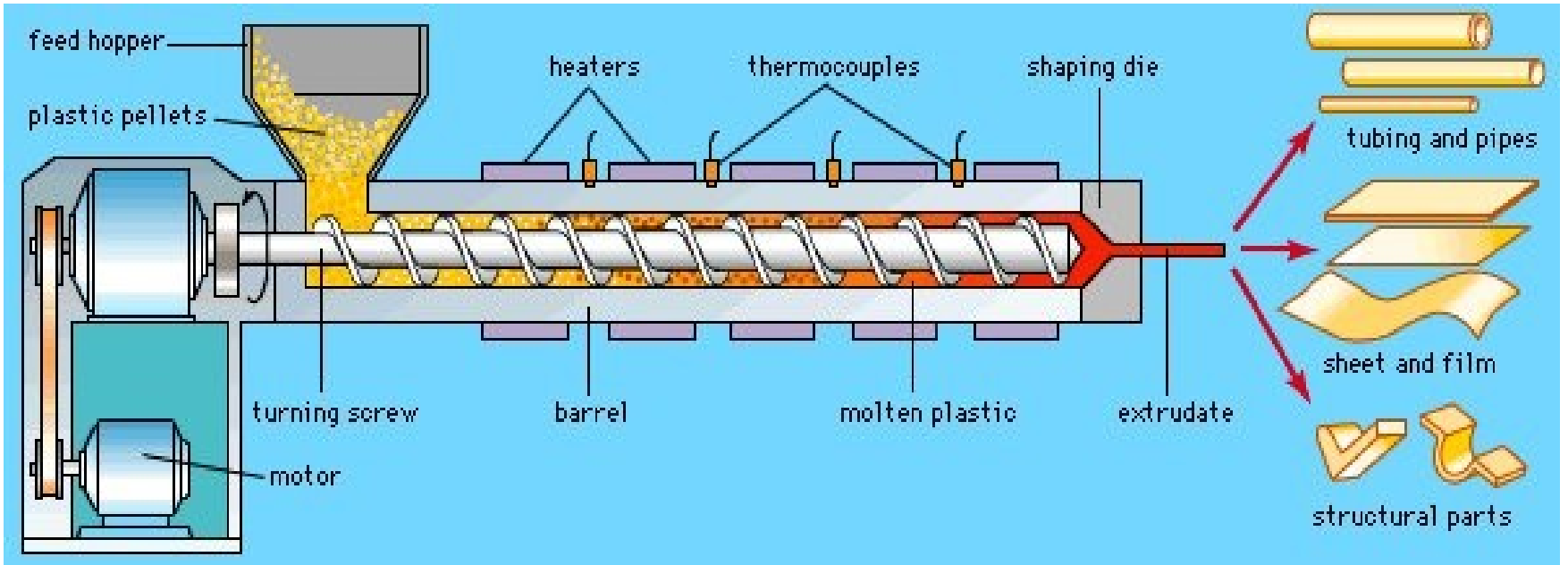


EXTRUSION

As the plastic is extruded(pushed out of the tube through its mouth) the plastic acquires

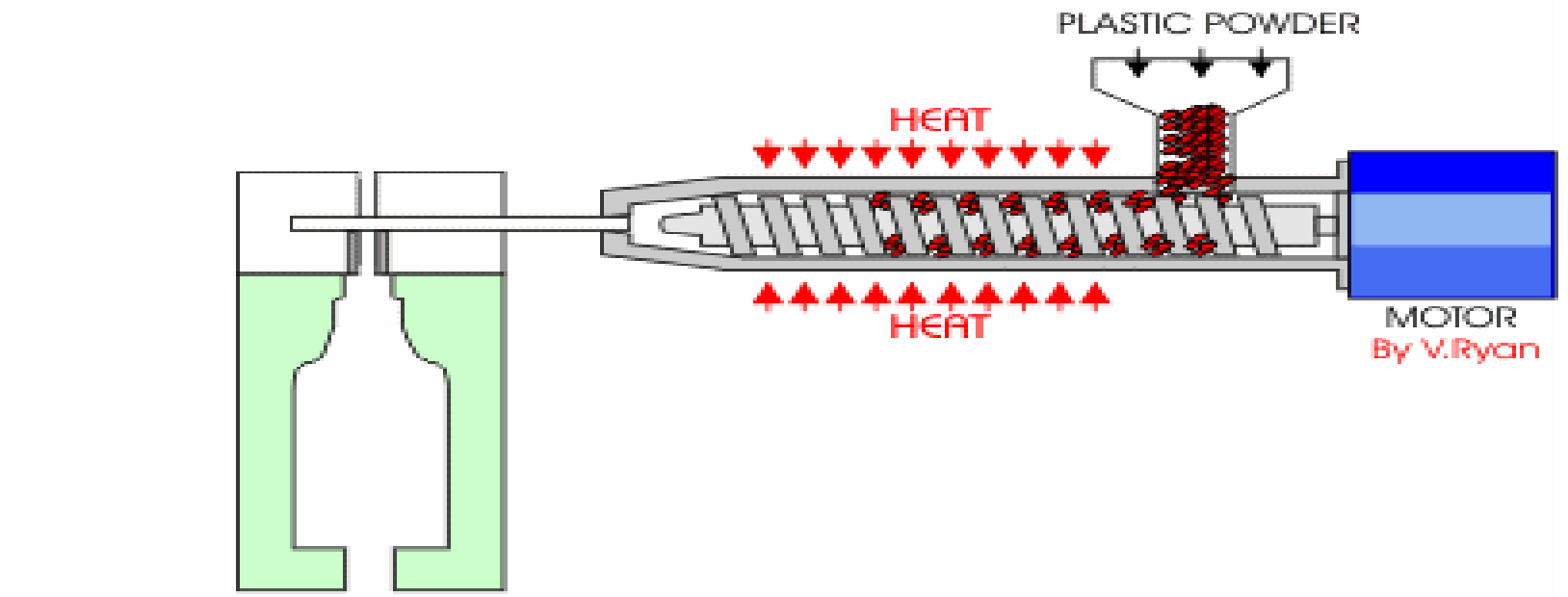
the shape of the mouth of the tube)

We use this tecnique to produce electrical wires



Blow moulding

Plastic grocery bags, bottles and similar items are made using this process.Plastic is introduced into the mold After i introduce blowinf air into the plastic and the plastic acquires the shape . After a few seconds, the mould is opened and the manufactured product is ready.



Vacuum forming

We use this tecnique to manufacture flat thing like plates

-First we put a hot plastic above the mould

-Then we suck the air out the mould and the vacuum pulls sheet down until it acquires the shape of the mould

-finally we blow air and the air push the plastic object out the mould

COMPRESSION

-FIRST INTRODUCE PLASTIC INTO THE MOULD

-THEM THE OTHERT PART

OF THE CAVITY MOULd IS

CLOSED TO COMPRESS

THE MATERIAL INSIDE

-THEM HOT THE MATERIAL

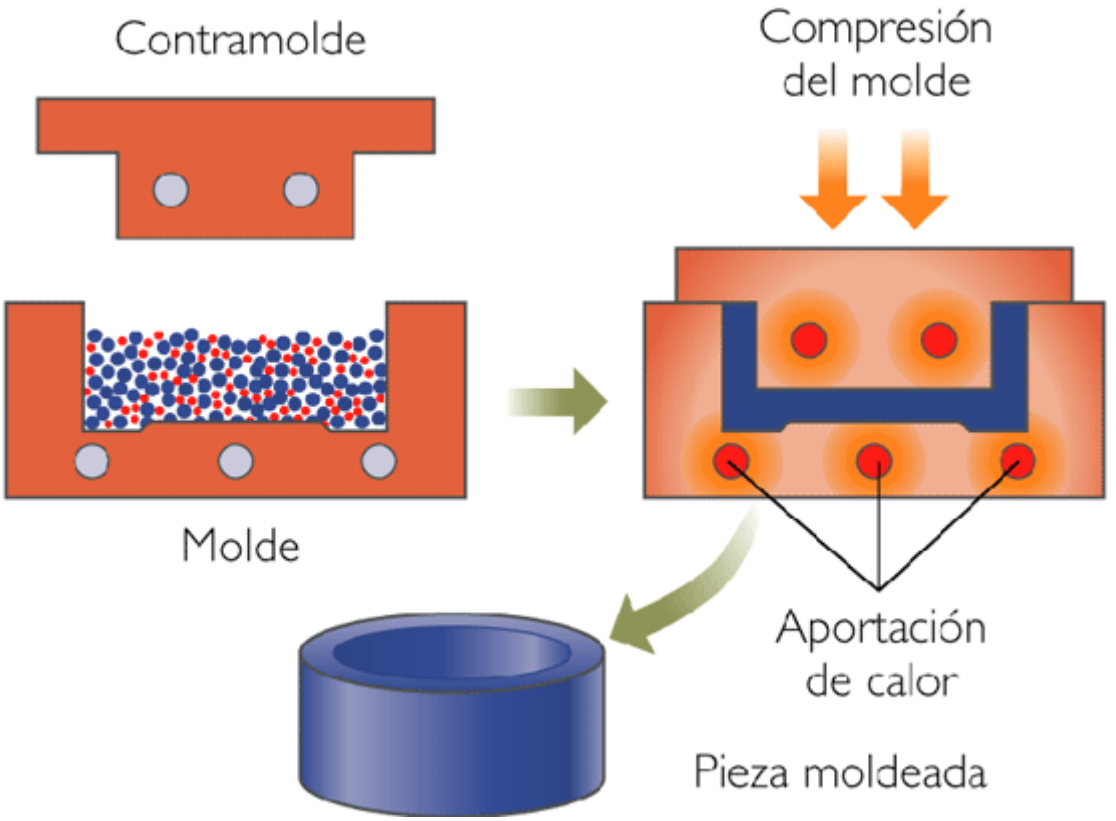
AND IT ADAPTS TO THE SHAME

OF THE CAVITY

-FINALLY WE EXTRACT THE

OBJECT WHEN THE PLASTIC

IS COOLED AND SOLIDIFIED-



ROLLING OR LAMINATON